

Work Order ID 141707

Tuesday, February 09, 2016 11:25:34 AM

141707

U/R

OK 4/16/2/10 Page 1

Item ID: D119-646-041

Accept

N900040100

Setup Start

NS1

Revision ID: URF15-560

Item Name: Replacement Skidtube with Wearpads, Fits LH or RH

Stop

NS2

Start Date: 2/9/2016 Start Qty: 1.00

1

Cust Item ID:

Required Date: 2/22/2016 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan:

MLJ

Date: FEB 09 2016

Tooling:

Date:

Run

Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
D3887-041	D
IIN-D119-646	C

100

0.00

100

DC

Doc.Control -USB or Paperwork

Memo

0.00

Photocopy bluefile & type labels per PPP D119-646-041 CHG003

MLJ

MAR 08 2016

ShrB
16/3/8

110

0.00

110

Skidtubes

Skidtubes

Memo

0.00

1- inspect Mat'L D2500-1-190 for damage

2-Cut tube to length as per dwg D3887 (154.8")

3- Ensure squareness of ends and scribe batch#

16-2-11

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QS1042) Approval	
Description Work Order Deviation		Disposition		Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : ☐					

Work Order ID 141707***141707***

Page 2

Tuesday, February 09, 2016 11:25:34 AM

Item ID: D119-646-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: URF15-560 Stop ***NS2***
Item Name: Replacement Skidtube with Wearpads, Fits LH or RH
Start Date: 2/9/2016 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 2/22/2016 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120	Chemical Conversion Coat per QSI005 4.1	0.00				1		16-02-10	JL
120									
HandFinish	Memo	0.00							
Hand Finishing									
121	QC7-Inspect Chemical Conversion Coat	0.00				1	0	16-02-11	
121									
QC	Memo	0.00							
Quality Control									
122	QC5- Inspect part completeness to step on W/O	0.00				1	0	16-02-11	
122									
QC	Memo	0.00							
Quality Control									

DAS
18
9-89DAS
18
9-89

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval		
Description Work Order Deviation				Disposition					

Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐				FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐							
				OTHER : ☐							

Work Order ID 141707

141707

Page 3

Tuesday, February 09, 2016 11:25:34 AM

Item ID: D119-646-041 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: URF15-560 Stop ***NS2***
 Item Name: Replacement Skidtube with Wearpads, Fits LH or RH
 Start Date: 2/9/2016 Start Qty: 1.00 ***1*** Cust Item ID:
 Required Date: 2/22/2016 Req'd Qty: 1.00 ***1*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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130

130

Skidtubes

Skidtubes

☆
over

Memo

1- Install drill Jig DT9477 drill X-bolt spacer pilot holes using 3/16" drill first side only.

2- 2nd side, locating from first saddle holes use DT9861 A/B to drill 2nd side fwd saddle holes.

3- 2nd side locating from fwd saddle drill remaining crossbolt spacer holes using DT9477

4- Open crossbolt spacer holes to finished size as per dwg D3887 (section D-D and E-E) ***DO NOT OPEN FWD Saddles Holes***

5- Deburr, blow out chips from inside of tube.

6- Bond web in place as per Dwg D3887 & QSI 015.

A/RSikaflex-291

Sikaflex expire date:

Start: 4 PM

Finish: _____ Time: _____

***** (Adhere for 12 hours) *****

133862
16-12-10

16-2-11
16-2-14

DQA: _____ Date: _____

**WORK ORDER NON-CONFORMANCE / UPDATE**

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Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☒ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☒ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☒ Quality ☐ Other ☐					
Date: 16/2/16		Step #: 130		QTY Effective: ①			MRB (QS1042) Approval DAS 12 9-89 16/2/16		
Description Work Order Deviation				Disposition				Completed By	
Modify web prior to insertion for compatibility with PSI 9734.				Drill /over/size web per attached figure. Draw to be update				 16-2-16	
								Lead hand / Supervisor Approval Verification	
								PD 16-02-16 QC / QA Coordinator Approval PD 16-02-16	
Root Cause				FAULT CATEGORY					
Environment ☐ Design ☒ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐				Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ ☒ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐					
OTHER :									

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Page 4

Tuesday, February 09, 2016 11:25:34 AM

Item ID: D119-646-041 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: URF15-560 Stop ***NS2***
 Item Name: Replacement Skidtube with Wearpads, Fits LH or RH
 Start Date: 2/9/2016 Start Qty: 1.00 ***1*** Cust Item ID:
 Required Date: 2/22/2016 Req'd Qty: 1.00 ***1*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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135	QC5- Inspect part completeness to step on W/O	0.00							
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135

QC

Memo

0.00

Quality Control

**DAS
18
9-89**

1 Ø 16-02-17

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐							
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval				
Description Work Order Deviation				Disposition							
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐		☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due		FAULT CATEGORY ☐ Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter		☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes		☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center		☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence	
				OTHER : ☐							

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Page 5

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Item ID: D119-646-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: URF15-560 Stop ***NS2***
Item Name: Replacement Skidtube with Wearpads, Fits LH or RH
Start Date: 2/9/2016 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 2/22/2016 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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140

0.00

140

Skidtubes

Skidtubes

Memo

0.00

1- Bend FWD end of tube using bender 1 and FOLIO 31 bend prog.
D3887.***Must use bending aid DT9544, ensure proper positioning***

2- Cut FWD end of tube as per dwg D3887.***Verify measurement***

3- Buff out marks left from bending

4- Drill FWD cap holes using DT8215. Open FWD & AET cap holes to 0.208"

5- Open FWD saddle holes to finished size as per dwg D3887

6- Drill FWD x-bolt spacer holes using DT9816 and open to finished
size.(verify measurement)

7- Drill Tow ring hole, using DT10047 locate from FWD saddle hole. (verify
measurement). Open to finished size.

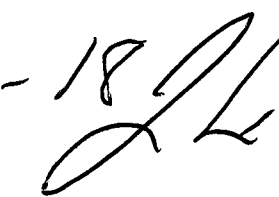
8- Drill 1.87" and 3.74 holes using DT10045 A&B locate from FWD saddle
hole. (verify measurement) as per dwg.

9- C'sink FWD cap hole as per detail "C"

10- Drill holes for wearpads using DT8931, open to 0.297".

11- Countersink crossbolt spacer holes, and prepare tube for welding, deburr.

12- Deburr and blow out chips from inside of tube.

16-2-17 16-2-18 

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

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Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
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Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
☐ OTHER : _____					

Work Order ID 141707***141707***

Page 6

Tuesday, February 09, 2016 11:25:34 AM

Item ID: D119-646-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: URF15-560 Stop ***NS2***
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Start Date: 2/9/2016 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 2/22/2016 Req'd Qty: 1.00 ***1*** Customer:
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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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150

QC5- Inspect part completeness to step on W/O 0.00

150

QC

Memo

0.00

Quality Control

DAS
18
9-891 Ø 16-02-18

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

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Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
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Page 7

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Revision ID: URF15-560 Stop *NS2*
Item Name: Replacement Skidtube with Wearpads, Fits LH or RH
Start Date: 2/9/2016 Start Qty: 1.00 *1* Cust Item ID:
Required Date: 2/22/2016 Req'd Qty: 1.00 *1* Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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160

0.00

160

Skidtubes

Memo

0.00

NOTE:TACK IN 2 MOST FWD X-BOLT SPACERS AND TEST FIT FWD
GROUND HANDELING FIXTURE,IF FIXTURE FITS WELL THEN
PROCEED. FIXTURE DT10091.

1-Insert crossbolt spacers. Weld as per QSI 004 and Dwg D3887. Remember to
back drill each hole before welding the other side. Use aluminum rod
A/RAluminum Rod m133876

2-Grind cross bolt welds flush as per Dwg D3887. Ensure no pin hole.

3-Counterbore 5/16" x 0.750" deep as per Dwg D3887.

4- Deburr & Scribe batch # on Aft end of tube.

170

QC5- Inspect part completeness to step on W/O

0.00

170

QC

Quality Control

Memo

0.00

TEST FIT USING FIXTURE DT10091.

DAS
38
9-89

FEB 23 2016

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

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		☐ OTHER : _____							

Tuesday, February 09, 2016 11:25:34 AM

Page 8

1 ϕ 16-02-25 DAS 34 9-89

DQA: _____ Date: _____

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☒ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS <table style="width:100%; border: none;"> <tr> <td style="width:15%;">Skid-tube ☐</td> <td style="width:15%;">Cross tube ☐</td> <td style="width:15%;">Water Jet ☐</td> <td style="width:15%;">Engineering ☒</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>						Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☒	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☒																						
Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐																						
Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐																						
Large Fab ☐	Composite ☐	Supplier ☐																							
Date : 16/2/10		Step #: 200		QTY Effective :		MRB (QS1042) Approval																			
Description Work Order Deviation				Disposition																					
No powder cast in saddle location				Acceptable to powder cast with deviation shown on attached dwg.																					
				16/2/10																					
				Completed By																					
				Lead hand / Supervisor Approval Verification																					
				QC / QA Coordinator Approval																					
Root Cause		FAULT CATEGORY																							
Environment ☐		No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐																			
Design ☐		Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐																			
Doc/Data ☐		Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐																			
Equip/Tooling ☐		Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐																			
Handling/Pre ☐		Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐																			
Material ☐		Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐																			
Internal Transport ☐		Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐																			
Tribal Knowledge ☐		Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐																			
LOA ☐		Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐																			
Substation ☐		Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐																			
Past Expiry Date ☐		Manufacturing Process ☐																							
Misidentified ☐		Past Due ☐	OTHER :																						

Work Order ID 141707

Tuesday, February 09, 2016 11:25:34 AM

141707

Page 9

Item ID: D119-646-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: URF15-560 Stop ***NS2***
Item Name: Replacement Skidtube with Wearpads, Fits LH or RH
Start Date: 2/9/2016 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 2/22/2016 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
210	QC3- Inspect Part Finish	0.00							
210									
QC	Memo	0.00							
Quality Control									
220		0.00							
220									
HandFinish	Memo	0.00							
Hand Finishing	1-Install inserts as per Dwg D3887.								
230		0.00							
230									
QC	Memo	0.00							
Quality Control									

DAS
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9-89

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition			
				Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : ☐					

Work Order ID 141707

141707

Page 10

Tuesday, February 09, 2016 11:25:34 AM

Item ID: D119-646-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: URF15-560 Stop ***NS2***
Item Name: Replacement Skidtube with Wearpads, Fits LH or RH
Start Date: 2/9/2016 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 2/22/2016 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
240		0.00							
240									
HandFinish									
Hand Finishing									
	Memo	0.00							
	1-Install wearpads, gaskets as per Dwg D3887. Put sikaflex in insert before installing bolts and washers								
	A/R Sikaflex-240/-291 <u>M1133862</u>								
	Sikaflex expire date: <u>16112</u>								
	2-assemble o'ring to plug as per dwg D3492 and apply o'ring lube								
	A/R 55-o'ring lube batch: <u>M133145</u> RTU 598 M133436 16103								
	3 -Inspect for foreign objects as per OSI 024								
	4 -Install Aft Cap and seal with Sikaflex. Clean excess adhesive.								
	A/R Sikaflex-240/-291 <u>M1133862</u>								
	Sikaflex expire date: <u>16112</u>								
245									
245									
QC									
Quality Control									
	Memo	0.00							
	QC5- Inspect part completeness to step on W/O	0.00							

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DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☒ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☒ Quality ☐ Other ☐					
Date : 16/2/10		Step #: 240		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				16/2/10 Completed By 16/02/29 DAS 15 8:00 Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Plug unused wecrplate holes with AN3C4A RATHER THAN AN3CSA.				Acceptable. - S bolt too long. AN3C-4A / M134055 (x6)					

Root Cause				FAULT CATEGORY			
Environment ☐		No Re-verification ☐		Pressure/Forced ☐		Temperature/Cure ☐	
Design ☐		Operator ☐		Bending ☐		Set-up ☐	
Doc/Data ☐		Offset/Setup ☐		Centre Not Concentric ☐		BOM/Route ☐	
Equip/Tooling ☐		Supplier ☐		Cracks ☐		Broken/Damage/Defect ☐	
Handling/Pre ☐		Training ☐		Crimp/Kink/Ripple/Wave ☐		Inspection Incomplete/Unqualified ☐	
Material ☐		Use for Testing ☐		Cuffs ☐		Contamination ☐	
Internal Transport ☐		Poor Information ☐		Crushing ☐		Countersink ☐	
Tribal Knowledge ☐		Rushing ☐		Heat Treat ☐		Cut Too Short ☐	
LOA ☐		Product Improvement ☐		Wave/Twist in Tube ☐		Instructions Incomplete/Unclear ☐	
Substation ☐		Process Improvement ☐		Marks/Chatter ☐		Drill Holes ☐	
Past Expiry Date ☐		Manufacturing Process ☐		OTHER : _____			
Misidentified ☐		Past Due ☐					

Work Order ID 141707

141707

Page 11

Tuesday, February 09, 2016 11:25:34 AM

Item ID: D119-646-041 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: URF15-560 Stop ***NS2***
 Item Name: Replacement Skidtube with Wearpads, Fits LH or RH
 Start Date: 2/9/2016 Start Qty: 1.00 ***1*** Cust Item ID:
 Required Date: 2/22/2016 Req'd Qty: 1.00 ***1*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
250	Wing Walk as per dwg QSI005 4.4 Batch <u>N1131/174</u>	0.00							
250	HandFinish	0.00							
Hand Finishing	Memo								
251	QC3- Inspect Part Finish	0.00							DAS 38 9-89
251	QC	0.00							
Quality Control	Memo								MAR 01 2016
260	Identify as per dwg & Stock Location: _____	0.00							
260	Packaging	0.00							
Packaging	Memo								



Sold

Drill as per Dat DS19734

16-3-8

DP 16-3-8

QC5-1603-08

DAS
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9-89

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :				MRB (QS1042) Approval	
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐	☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐			
Design ☐	☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐			
Doc/Data ☐	☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐			
Equip/Tooling ☐	☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐			
Handling/Pre ☐	☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐			
Material ☐	☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐			
Internal Transport ☐	☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐			
Tribal Knowledge ☐	☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐			
LOA ☐	☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐			
Substation ☐	☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐			
Past Expiry Date ☐	☐	Manufacturing Process ☐	OTHER :						
Misidentified ☐	☐	Past Due ☐							

Work Order ID 141707***141707***

Page 12

Tuesday, February 09, 2016 11:25:34 AM

Item ID: D119-646-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: URF15-560 Stop ***NS2***
Item Name: Replacement Skidtube with Wearpads, Fits LH or RH
Start Date: 2/9/2016 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 2/22/2016 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
270	QC21- Final Inspection - Work Order Release	0.00							
270									
QC	Memo	0.00							
Quality Control									

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DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date : _____		Step #: _____		QTY Effective : _____				MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Description Work Order Deviation				Disposition					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐							
		OTHER : ☐							

Picklist Print

Thursday, February 11, 2016 8:10:42 AM

Page 1

Work Order ID: 141707

141707

Parent Item: D119-646-041

D119-646-041

Parent Item Name: Replacement Skidtube with Wearpads, Fits LH or RH

Start Date: 2/9/2016

Required Date: 2/22/2016

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP RevA: New issue DD verified by:EC IPP rev B
10.02.22 per PAR 09-043 EC verified by:DD IPP REVC 12.11.05
(DEOD3887-B-1)(ecn 12-675) DD verf:JLM IPP REV:D 13.03.20 per
chg003 ECN13-534 DD verf:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D2500-1-190 *D2500-1-190* Ext'n -I' Beam Tube 4"		Manufactured	No			110	Each	22.0000	1	1			
				<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>					
				HALL		22							
				134259		22							
D2579 *D2579* Crossbolt Spacer		Manufactured	No			140	Each	21.0000	2	2			
				<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>					
				LG001		21							
				123997		21							
D2855-3 *D2855-3* Cap		Manufactured	No			240	Each	53.0000	2	2			
				<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>					
				FP001		53							
				135830		3							
				137525		50							

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval		
Description Work Order Deviation				Disposition					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐							
		OTHER : ☐							

Picklist Print

Thursday, February 11, 2016 8:10:42 AM

Page 2

Work Order ID: 141707

141707

Parent Item: D119-646-041

D119-646-041

Parent Item Name: Replacement Skidtube with Wearpads, Fits LH or RH

Start Date: 2/9/2016

Required Date: 2/22/2016

Start Qty: 1.00

Required Qty: 1.00

NAS1611-005

Purchased No

240

Each

423.0000

16

16

NAS1611-005

O-RING

**

all 16/02/29

Location

Loc Qty

Loc Code

FP001

423

m129198

11

m133498

412

x16

D3492-5

Manufactured No

240

Each

151.0000

16

16

D3492-5

Plug

**

all 16/02/29

Location

Loc Qty

Loc Code

FP001

151

133396

8

136396

6

138198

2

138880

35

140883

100

x16

D3672-1

Manufactured No

240

Each

686.0000

2

2

D3672-1

Washer, Phenolic

**

all 16/02/29

Location

Loc Qty

Loc Code

FG

10

85222

10

ST049

176

B113581 *

112218

72

127322

104

ST051A

500

134785

500

x2

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval		
Description Work Order Deviation				Disposition					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐							
		OTHER : ☐							

Picklist Print

Thursday, February 11, 2016 8:10:42 AM

Page 3

Work Order ID: 141707

141707

Parent Item: D119-646-041

D119-646-041

Parent Item Name: Replacement Skidtube with Wearpads, Fits LH or RH

Start Date: 2/9/2016

Required Date: 2/22/2016

Start Qty: 1.00

Required Qty: 1.00

D3681-1

Manufactured No

160

Each

68.0000

8

8

D3681-1

Spacer

8E16-0218

Location

Loc Qty

Loc Code

LG001

68

138818

32

139031

32

139615

4

8

D3847-1

Manufactured No

240

Each

15.0000

5

5

D3847-1

Wearpad

11 16/02/24

Location

Loc Qty

Loc Code

FP001

15

135979

5

138338

10

13141897

AS

D3847-11

Manufactured No

240

Each

6.0000

1

1

D3847-11

Wearpad

11 16/02/24

Location

Loc Qty

Loc Code

FP001

6

137781

4

138418

2

X1

D3885-1

Manufactured No

140

Each

18.0000

1

1

D3885-1

Standard Web

DP 16-2-16

Location

Loc Qty

Loc Code

LG002

18

136841

8

136925

10

1

Thursday, February 11, 2016 8:10:43 AM

Shop Packet Print

Page 3

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval 		
Description Work Order Deviation				Disposition					
							Completed By		
							Lead hand / Supervisor Approval Verification		
							QC / QA Coordinator Approval		
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____							
Misidentified ☐	Past Due ☐								

Picklist Print

Thursday, February 11, 2016 8:10:43 AM

Page 4

Work Order ID: 141707

141707

Parent Item: D119-646-041

D119-646-041

Parent Item Name: Replacement Skidtube with Wearpads, Fits LH or RH

Start Date: 2/9/2016

Required Date: 2/22/2016

Start Qty: 1.00

Required Qty: 1.00

D3903-1 Manufactured No 160 Each 117.0000 12 12

D3903-1

Spacer

**

BB16-02-1B

Location

Loc Qty

Loc Code

LG001

117

140943

117

12

ALS4-1032-130 AE4S4-1032-130 Purchased No

220 Each 1,611.000 30 30

AI S4-1032-130

Rivnut

**

all 16/02/29

Location

Loc Qty

Loc Code

FP001

1611

M133077

1611

x32

AN3C5A Purchased No

240 Each 775.0000 32 32

AN3C5A

Bolt

**

all 16/02/29

Location

Loc Qty

Loc Code

FG

5

122800

5

FP001

70

M133234

54

M133769

16

OVER002

600

M133686

600

ST338a

100

x32

M125388

35

m127290

3

M131803

42

M132640

20

Thursday, February 11, 2016 8:10:43 AM

Shop Packet Print

Page 4

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval		
Description Work Order Deviation				Disposition					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐							
		OTHER : ☐							

Picklist Print

Thursday, February 11, 2016 8:10:43 AM

Page 5

Work Order ID: 141707

141707

Parent Item: D119-646-041

D119-646-041

Parent Item Name: Replacement Skidtube with Wearpads, Fits LH or RH

Start Date: 2/9/2016

Required Date: 2/22/2016

Start Qty: 1.00

Required Qty: 1.00

NAS1149C0332R

Purchased

No

Each

5,299.000

32

NAS1149C0332R

WASHER

ll 16/02/29

Location

Loc Qty

Loc Code

FP001

2504

m132262

4

m132930

1004

m134073

1496

GA

76

X32

m133284

76

ST266

2719

m133284

719

m134063

2000

MS24694-C52

Purchased

No

Each

121.0000

2

MS24694-C52

SCREW

ll 16/02/29

Location

Loc Qty

Loc Code

FP001

115

m127059

17

m133855

98

X2

ST287

6

124308

6

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

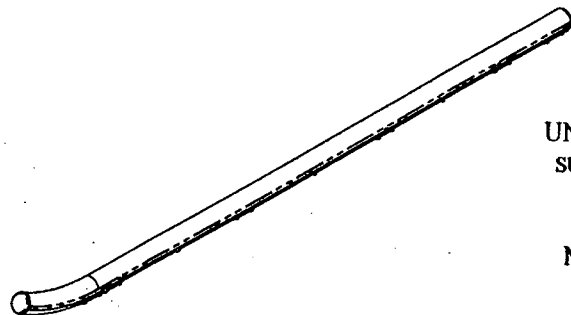
QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval		
Description Work Order Deviation				Disposition					

Root Cause				FAULT CATEGORY			
Environment ☐	☐ No Re-verification	☐ Pressure/Forced	☐ Temperature/Cure	☐ Power Loss/Surge	☐ Positioned Wrong		
Design ☐	☐ Operator	☐ Bending	☐ Set-up	☐ Folio/Program	☐ Outside Dimensions		
Doc/Data ☐	☐ Offset/Setup	☐ Centre Not Concentric	☐ BOM/Route	☐ Grain	☐ Over/Under tolerance		
Equip/Tooling ☐	☐ Supplier	☐ Cracks	☐ Broken/Damage/Defect	☐ Weld	☐ Part Incorrect		
Handling/Pre ☐	☐ Training	☐ Crimp/Kink/Ripple/Wave	☐ Inspection Incomplete/Unqualified	☐ Wrong Stock Pulled	☐ Part Lost/Missing		
Material ☐	☐ Use for Testing	☐ Cuffs	☐ Contamination	☐ Out of Sequence	☐ Part Moved		
Internal Transport ☐	☐ Poor Information	☐ Crushing	☐ Countersink	☐ Off-set	☐ Drawing		
Tribal Knowledge ☐	☐ Rushing	☐ Heat Treat	☐ Cut Too Short	☐ Mislabeled	☐ Finish		
LOA ☐	☐ Product Improvement	☐ Wave/Twist in Tube	☐ Instructions Incomplete/Unclear	☐ Fit/Function	☐ Misread		
Substation ☐	☐ Process Improvement	☐ Marks/Chatter	☐ Drill Holes	☐ Misaligned/off center	☐ Turning Sequence		
Past Expiry Date ☐	☐ Manufacturing Process	OTHER : _____					
Misidentified ☐	☐ Past Due						

8 7 6 5 4 3 2 1



SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 141707 MJS
16-02-09

D3887-041 STANDARD SKIDTUBE ASSY WITH WEARPAD (SHOWN)
D3887-043 STANDARD SKIDTUBE ASSY WITH WEAPLATE (SIMILAR)
D3887-045 STANDARD SKIDTUBE ASSY WITH TRAINING WEARPLATE (SIMILAR)

ITEM	QTY -041	QTY -043	QTY -045	P/N	DESCRIPTION
1	X			D3887-041	STD SKIDTUBE ASSY WITH WEARPAD
2		X		D3887-043	STD SKIDTUBE ASSY WITH WEARPLATE
3			X	D3887-045	STD SKIDTUBE ASSY WITH TRAINING WEARPLATE
10	2	2	2	D2579	CROSS BOLT SPACER
11	2	2	2	D2855-3	CAP
12	16	16		D3492-045	PLUG ASSY
13	2	2	2	D3872-1	PHENOLIC WASHER
14	8	8	8	D3881-1	SPACER
17	5	5		D3847-1	WEARPAD
18	1	1		D3847-11	AFT WEARPAD
19		1		D3847-043	FWD WEARPLATE ASSY
20		1		D3847-045	CENTER WEAPLATE ASSY
21		1		D3847-047	AFT WEARPLATE ASSY
22			1	D3849-041	FWD TRAINING WEARPLATE ASSY
23			1	D3849-043	AFT WEARPLATE ASSY
24	1	1	1	D3885-1	STANDARD WEB
25	1	1		D3887-11	STANDARD SKIDTUBE
26			1	D3887-13	STANDARD SKIDTUBE
27	12	12	12	D3903-1	SPACER
28			16	D3904-1	WASHER
41	30	30		ALS4-1032-130	INSERT
42	32	32	2	AN3C5A	BOLT
43			8	AN3C48A	BOLT
44	32	32		NAS1149C0332R	WASHER (OR AN980C10L)
45			8	MS21043-3	NUT
46	2	2	2	MS24694-CS2	SCREW

RELEASED

UNDER REVIEW

2014 NOV 24

15.04.30 URF15-560 AP

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1 PRIOR TO INSERTING D3885-1 WEB
POWDER COAT "WHITE" (4.3.5.1) PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED TO 0.5 ABOVE LOCATION RIDGE PER DART QSI 005 4.4
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: D3887-041 = 32.0 lbs
D3887-043 = 37.0 lbs
D3887-045 = 38.1 lbs
- 8) WELD PER DART QSI 004
- 9) DAMAGE TOLERANCE ON FWD BEND:
THERE SHOULD BE NO VISIBLE WRINKLES IN THE BEND FROM THE GROUND TO A HEIGHT OF 8.5 INCHES ABOVE THE GROUND. IT IS ACCEPTABLE TO POLISH OUT GOUGES UP 0.020" DEEP IN THE BENT PORTION OF THE TUBE. A MAXIMUM REDUCTION IN DIAMETER OF 0.150" IS ACCEPTABLE IN THE BENT PORTION OF THE TUBE.
- 10) INSERT D3885-1 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH SIKAFLEX-241/-291 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP
- 11) INSERT D3492-045 PLUG ASSY INTO Ø0.197 HOLES (BOTH SIDES OF TUBE)
- 12) USE DART DRILL TEMPLATE DT8931 TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARPLATE INSERTS. INSTALL AELS-1032-130 INTO D3887-11 ONLY. INSTALL AN3C5A BOLTS AND NAS1149C0332R WASHERS WITH SIKAFLEX-241/-291.

D	REVISED BEND TOLERANCES FOR MANUFACTURABILITY, 135.07 WAS 134.04 (ZN D5-8), ADD 5.07 (ZN C2-8), ADD 118.8 (ZN D5-8), DELETE GASKETS (80M, SH 2)	DB	13.09.20
C	(SHT 1, PL, ZN C2-2, C2-2 C4-2) ITEM 13, QTY 2 WAS 4, ITEM 42, QTY 32 WAS 34, ITEM 44, QTY 30 WAS 32, ADD ITEM 46, MS24694-CS2 WAS AN3C5A, 2 PLCS (ZN C1-5, C1-6, 94-7) Ø0.291 CSK Ø0.365 X 100" WAS Ø0.214 THRU, ADDED DETAIL F (ZN C5-5, C2-6, B3-7), ADD ITEM 10, D2579 CROSS BOLT SPACER (ZN D4-1, A6-7)	DB	13.02.19
B	ALS4-1032-130 WAS AELS-1032-130 (ZN C4-1, C5-7, C3-7), ADD DT8931 (ZN A6-1), ADD 134.04 (ZN C4-8), D2855-3 WAS D2579 (ZN D4-1, C1-2, C2-2, C1-3, C2-3, C1-4, C2-4), AN3C5A WAS AN3C4A (ZN C2-2, C2-3, C2-3, C2-4, C2-4), Ø0.313 WAS Ø0.328 (ZN C4-5, C4-5, C2-7 & B3-7) REVISED NOTE H (ZN B3-7)	RF	09.06.30
A	NEW ISSUE	RF	09.03.30
REV.	DESCRIPTION	BY	DATE
DESIGN	RF	DART AEROSPACE USA, INC. KENT, WA	
DRAWN	DB		
CHECKED		DRAWING NO.	REV. D
MFG. APPR.		D3887	SHEET 1 OF 8
APPROVED		TITLE	SCALE
DE APPR.		A119 STD SKIDTUBE ASSY	NTS
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AN3C5A BOLT
D3672-1 PHENOLIC WASHER
NAS1149C0332R WASHER
(1 PER SIDE)

SEAL WITH
SIKAFLEX-241/291

D2855-3 CAP

D3847-11
WEARPAD

1.5
1.5

2.00 DISTANCE TO D3885-1 WEB, REF

BLACK ANTI-SKID TO 0.5
ABOVE LOCATION RIDGE
TYP

11
Ø0.197
6 PL PER SIDE
REF

1.5

AN3C5A BOLT
NAS1149C0332R WASHER
24 PL

PLUG UNUSED INSERTS WITH
AN3C5A BOLT
NAS1149C0332R WASHER
6 PL

D3847-1
WEARPAD
5 PL

D2855-3 CAP

1.5

SEAL WITH
SIKAFLEX-241/291

MS24694-C52 SCREW
(1 PER SIDE)

D3887-041 STANDARD SKIDTUBE ASSY WITH WEARPAD
(MAKE FROM D3887-11)

UNDER REVIEW

15.04.30 URF15-560 AP

RELEASED

2014 NOV 24 *q*

DESIGN	RF	DART AEROSPACE USA, INC.	
DRAWN	DB	KENT, WA	
CHECKED		DRAWING NO.	REV. D
MFG. APPR.		D3887	SHEET 2 OF 8
APPROVED		TITLE	SCALE
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AN3CSA BOLT
D3872-1 PHENOLIC WASHER
NAS1149C0332R WASHER
(1 PER SIDE)

SEAL WITH
SIKAFLEX-241/291

D2855-3 CAP

D3847-11
WEARPAD

D3847-047
AFT WEARPLATE ASSY

AN3CSA BOLT
NAS1149C0332R WASHER
30 PL

BLACK ANTI-SKID TO 0.5
ABOVE LOCATION RIDGE
TYP

11
Ø 0.187
8 PL PER SIDE
REF

D3847-045
CENTER WEARPLATE ASSY

D3847-043
FWD WEARPLATE ASSY

D3847-1
WEARPAD
5 PL

D2855-3 CAP

SEAL WITH
SIKAFLEX-241/291

MS24694-C52 SCREW
(1 PER SIDE)

D3887-043 STANDARD SKIDTUBE ASSY WITH WEARPLATE
(MAKE FROM D3887-11)

UNDER REVIEW

15.04.30 URF15-560 AP

RELEASED

2016 NOV 24

DESIGN	RF	DART AEROSPACE USA, INC.	
DRAWN	DB	KENT, WA	
CHECKED		DRAWING NO.	REV. D
MFG. APPR.		D3887	SHEET 3 OF 8
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AN3C5A BOLT
D3672-1 PHENOLIC WASHER
NAS1149C0332R WASHER
(1 PER SIDE)

SEAL WITH
SIKAFLEX-241/291

D2855-3 CAP

AN3C46A BOLT
D3904-1 WASHER, 2 PL
MS21043-3 NUT
8 PL

D3849-043
AFT TRAINING WEARPLATE ASSY

BLACK ANTI-SKID TO 0.5
ABOVE LOCATION RIDGE
TYP

1.5 1.5 1.5

2.00 DISTANCE TO D3885-1 WEB

1.5 1.5

1.5 D2855-3 CAP

SEAL WITH
SIKAFLEX-241/291

MS24694-C52 SCREW
(1 PER SIDE)

D3849-041
FWD TRAINING WEARPLATE ASSY

UNDER REVIEW

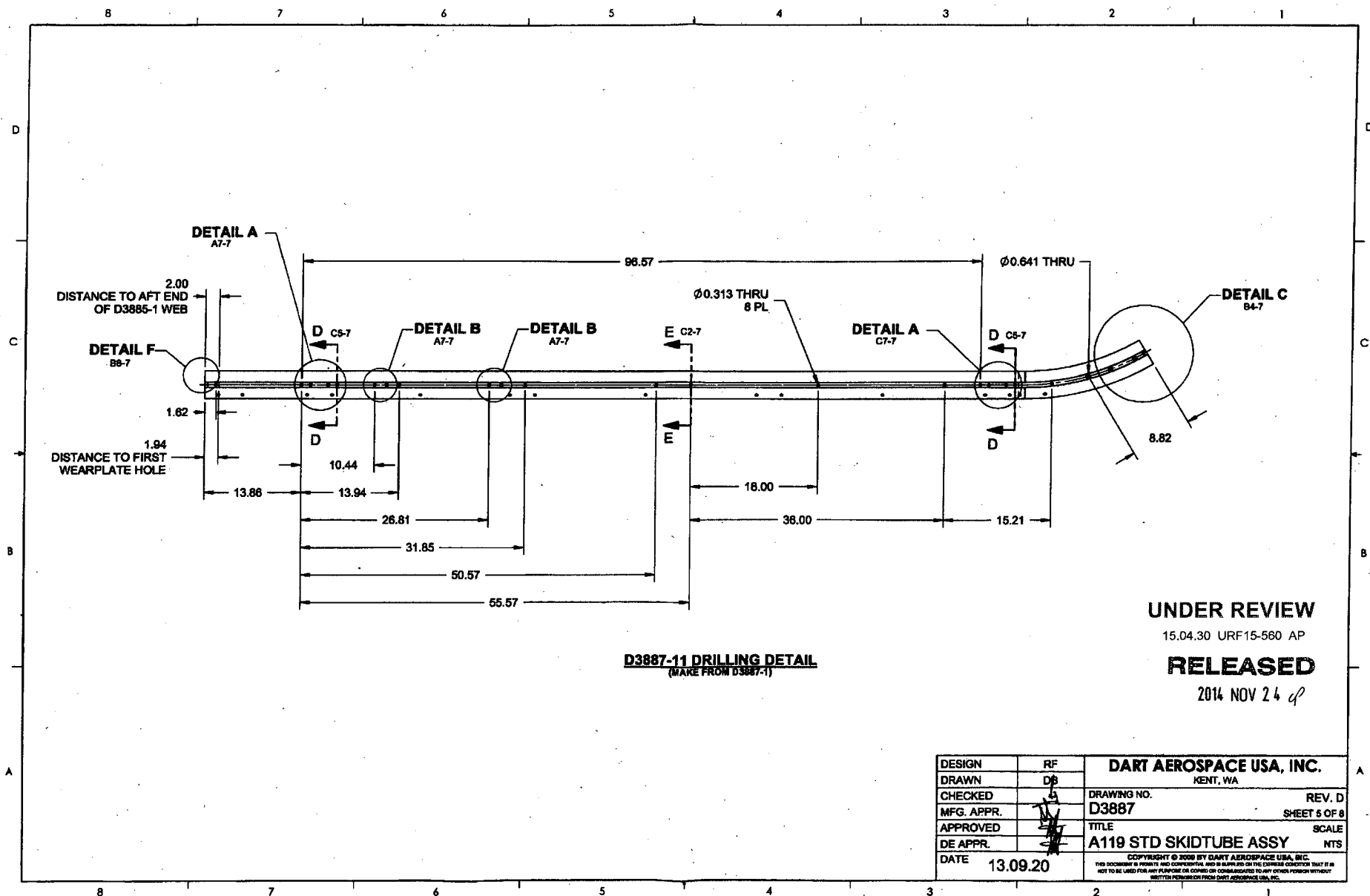
15.04.30 URF15-560 AP

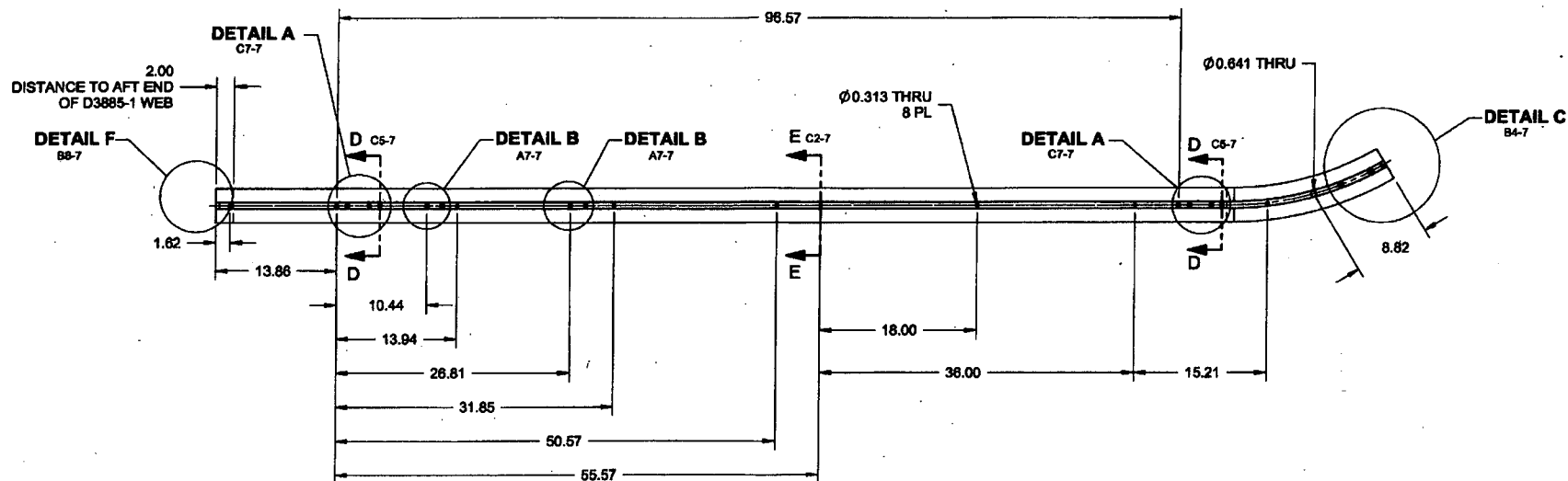
RELEASED

2014 NOV 24 *dp*

D3887-045 STANDARD SKIDTUBE ASSY WITH TRAINING WEARPLATE
(MAKE FROM D3387-13)

DESIGN	RF	DART AEROSPACE USA, INC.	
DRAWN	DB	KENT, WA	
CHECKED	<i>[Signature]</i>	DRAWING NO.	REV. D
MFG. APPR.	<i>[Signature]</i>	D3887	SHEET 4 OF 8
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D3887-13 DRILLING DETAIL
(MAKE FROM D3887-1)

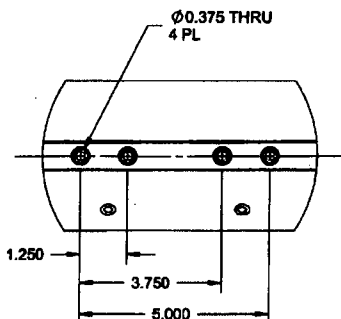
UNDER REVIEW

15.04.30 URF15-560 AP

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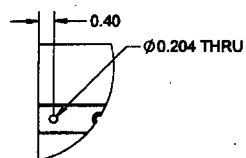
2014 NOV 24 *up*

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DRAWN	DB	KENT, WA	
CHECKED		DRAWING NO.	REV. D
MFG. APPR.		D3887	SHEET 6 OF 8
APPROVED		TITLE	SCALE
DE APPR.		A119 STD SKIDTUBE ASSY	NTS
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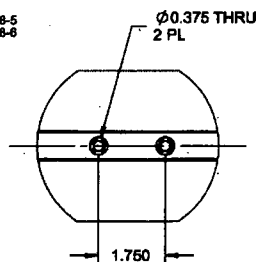
DETAIL A
SCALE 4X

D7-5
C3-5
D7-6
C3-6



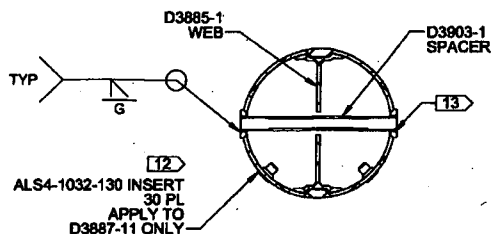
DETAIL F
SCALE 4X

C8-5
C8-6



DETAIL B
SCALE 4X

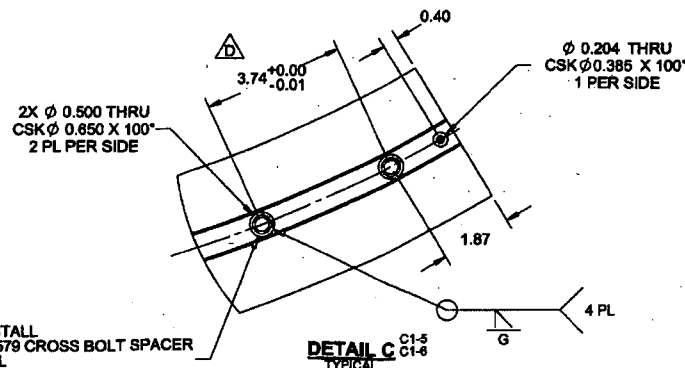
C6-5
C5-5
C8-6
C5-6



SECTION D-D
SCALE 4X

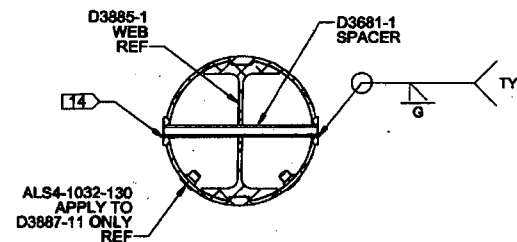
(FOR 12 X Ø 0.375 HOLES
PER SKIDTUBE)

C7-5
C3-6
C7-8
C2-8



DETAIL C
TYPICAL
SCALE 4X

C1-5
C1-6



SECTION E-E
SCALE 4X
(FOR 8 X Ø 0.313 HOLES
PER SKIDTUBE)

C4-5
C4-6

NOTES:

- 13) AFTER DRILLING AND BENDING ASSEMBLY
PERFORM THE FOLLOWING FOR Ø 0.375 HOLES ONLY:
i) CHAMFER HOLES Ø 0.475 x 45°
ii) INSERT D3903-1 SPACER
iii) WELD INTO PLACE AND GRIND FLUSH
iv) C'BORE TO 0.313 x 0.75 DEEP
v) DEBURR HOLES

- 14) AFTER DRILLING AND BENDING ASSEMBLY
PERFORM THE FOLLOWING FOR Ø 0.313 HOLES ONLY:
vi) CHAMFER HOLES Ø 0.354 x 45° OR 0.050 DEEP x 45° (BOTH SIDES)
vii) INSERT D3681-1 SPACER
viii) WELD INTO PLACE AND GRIND FLUSH
ix) DEBURR HOLES

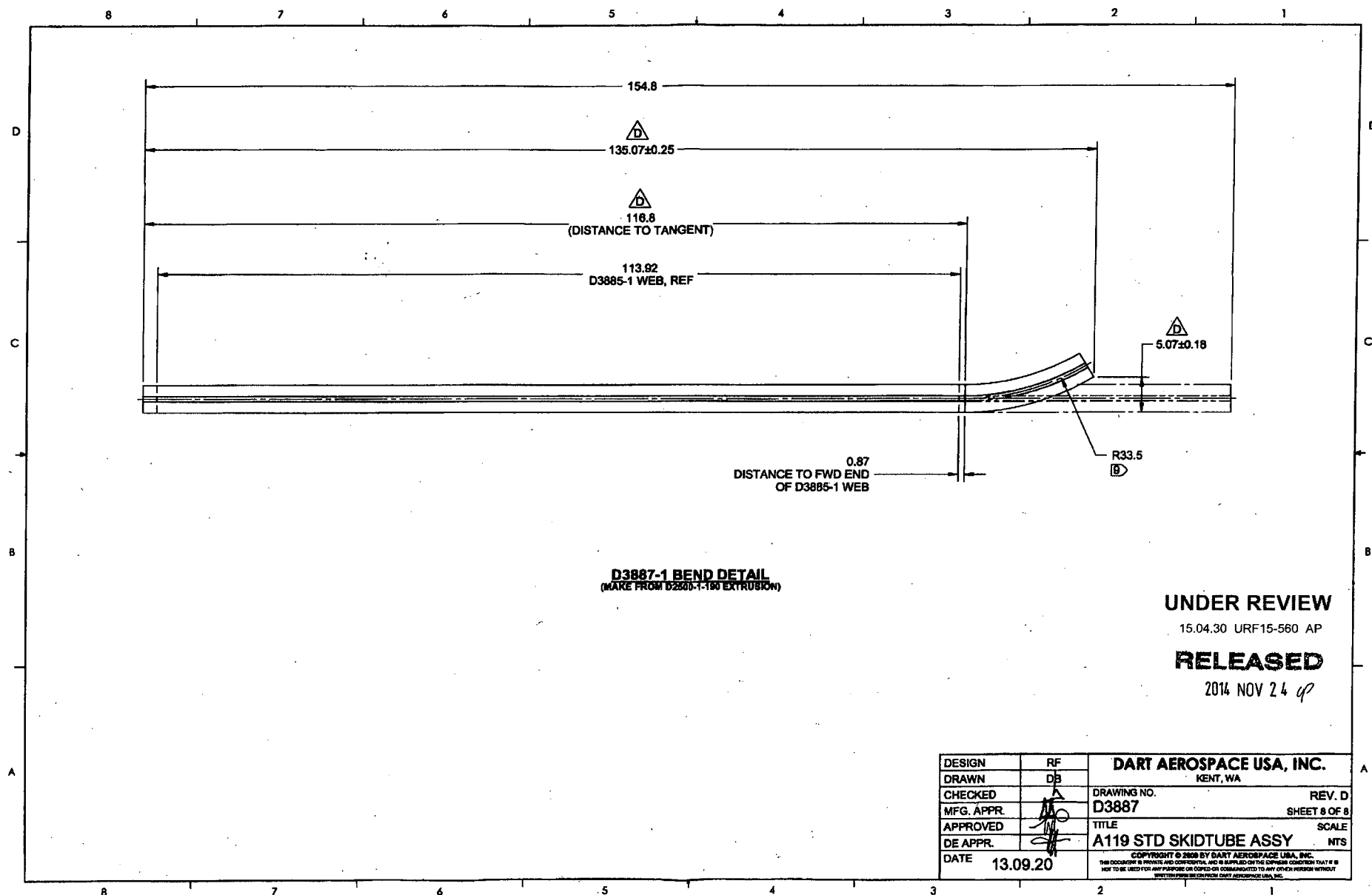
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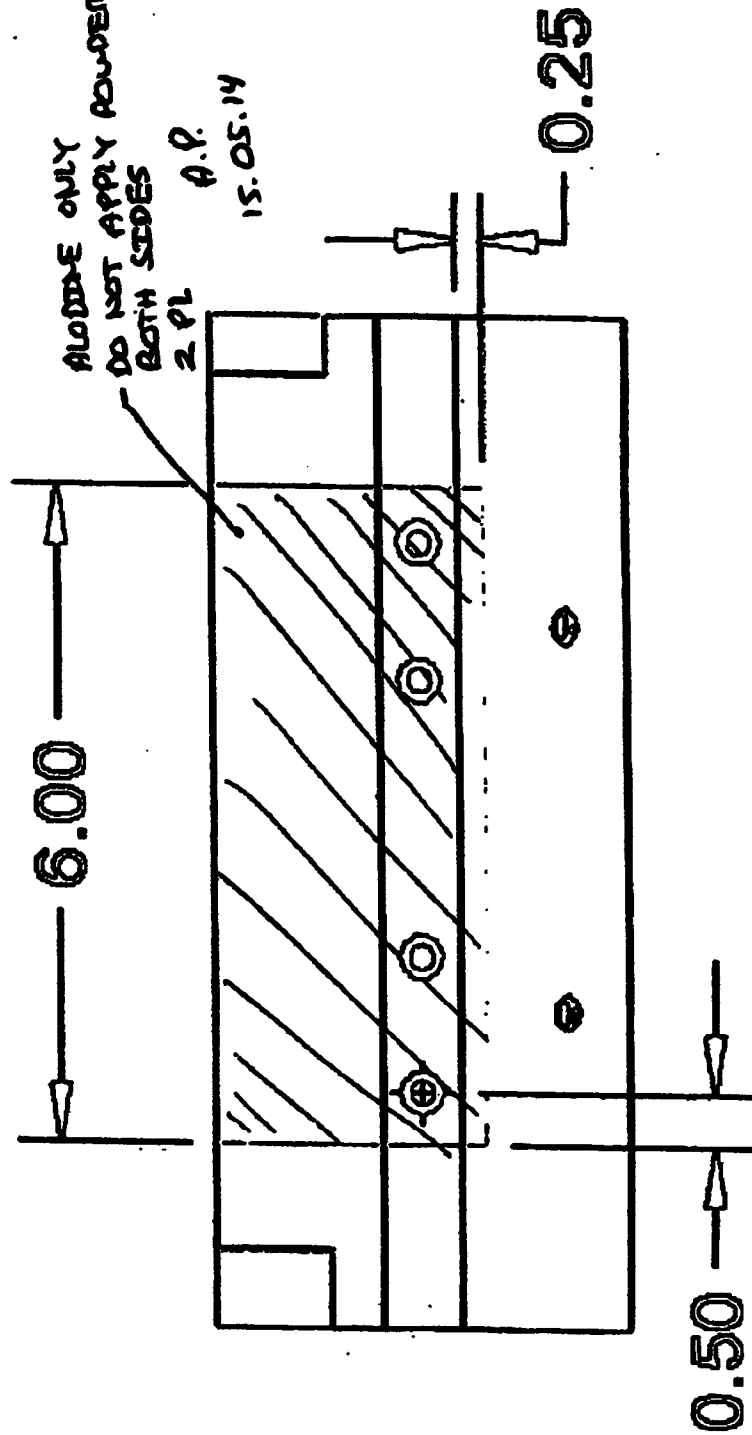
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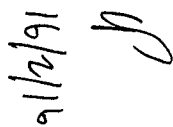
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Math 123



DART SERVICE INSTRUCTION

**TO AMEND INSTALLATION INSTRUCTIONS T1N-D119-646 REV. C
AND INSTRUCTIONS FOR CONTINUED AIRWORTHINESS ICA-D119-646 REV. 2**
REF FAA STC: SR02024SE
REF EASA STC: 10040294

1.0 PURPOSE:

The purpose of this Dart Service Instructions is to add D119-646-313/-314 Skidtube Protector Kit to make the D119-646-011/-012/-111/-112/-211/-212 Skidtube Kits compatible with the 109-0812-68-105 Hoist Structural Provision Kit and the 109-0816-18-301 Rappelling Kit. The D119-646-313 Skidtube Protector, LH replaces the 109-B710-05-201 kit and the D119-646-314 Skidtube Protector, RH replaces the 109-B710-05-202 kit.

2.0 D119-646-313/-314 INSTALLATION:

These instructions are for modifying the D119-646-011/-012/-111/-112 Skidtube Installations.

- 2.1 Remove D3492-045 Plug Assemblies from two locations on each side of the skidtube as shown in Figure 3.
- 2.2 Position D5376-1 drilling jig tool with the arrow pointing fwd as shown in Figure 3. Use 2x AN3-45A bolts to hold the jig in place. Transfer drill 4x $\varnothing 0.129$ " (#30 drill) holes from D5376-1 drilling jig to skidtube ridge as shown in Figure 3. **Caution:** Drill perpendicular to the skidtube ridge.
- 2.3 Remove drilling jig. Using a 5/16" drill, open up the pilot holes and drill through the skidtube ridge and center web inside of the skidtube. **Caution:** Drill perpendicular to the skidtube ridge.
- 2.4 Countersunk 4x 5/16" holes to $\varnothing 0.348$ " (8.84mm) x 100° as shown in Figure 3 and deburr.
- 2.5 Repeat steps 2.2 to 2.4 for the opposite side of the skidtube.
- 2.6 Vacuum the debris from inside of the skidtube. Touch up affected area using (Alodine 1200 or 1201) per MIL-DTL-5541.
- 2.7 Install 8x D5374-3 Bushings in the new holes. Seal bushings with Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant as shown in Section C-C.
- 2.8 Remove all D3492-045 Plug Assemblies from skidtube fwd of the ground handling wheel lugs.
- 2.9 If the D119-646-314 Skidtube Protector Kit is required for hoisting operations on the RH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS11490D332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 2.10 If the D119-646-313 Skidtube Protector Kit is required for hoisting operations on the LH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS11490D332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 2.11 If the D119-646-314 Skidtube Protector Kit is required for rappelling operations on the RH side of the aircraft install D5371-2 Hook using 4x AN3-45A bolts, 8x NAS11490D332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 2.12 If the D119-646-313 Skidtube Protector Kit is required for rappelling operations on the LH side of the aircraft install D5371-1 Hook using 4x AN3-45A bolts, 8x NAS11490D332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 2.13 Install D5369-2 Cable Guard on the RH side of the aircraft using 6x AN3-47A bolts, 6x D5374-1 Bushings, 6x D4506-3 Washers, 12x NAS11490D332J washers, 6x MS21042L3 nuts as shown in Figure 1 Section A-A. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 2.14 Install D5369-1 Cable Guard on the LH side of the aircraft using 6x AN3-47A bolts, 6x D5374-1 Bushings, 6x D4506-3 Washers, 12x NAS11490D332J washers, 6x MS21042L3 nuts as shown in Figure 1 Section A-A. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 2.15 Update aircraft log book to indicate installation of the D119-646-313/-314 kit and adjust weight and balance record for the aircraft with weight and balance data provided in Section 5.0 of this document.

NOTE: Additional NAS11490D332J washers may be installed under the nuts to ensure 1.5-4 threads in safety on the bolts. Although not generally necessary, it is also acceptable to replace the AN3 bolts provided with longer or shorter AN3 bolts, if required.

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3.0 D119-646-313/-314 INSTALLATION:

These instructions are for modifying the D119-646-211/-212 Skidtube Installations.

- 3.1 Temporarily remove D3849-043 Training Wearplate from aft end of the skidtube per ICA-D119-646 Section 32.
- 3.2 Position D5376-1 drilling jig tool with the arrow pointing fwd as shown in Figure 3. Use 2x AN3-45A bolts to hold the jig in place. Transfer drill 4x $\varnothing 0.129$ " (#30 drill) holes from D5376-1 drilling jig to skidtube ridge as shown in Figure 3. **Caution:** Drill perpendicular to the skidtube ridge.
- 3.3 Remove drilling jig. Using a 5/16" drill, open up the pilot holes and drill through the skidtube ridge and center web inside of the skidtube. **Caution:** Drill perpendicular to the skidtube ridge.
- 3.4 Countersunk 4x 5/16" holes to $\varnothing 0.348$ " (8.84mm) x 100° as shown in Figure 3 and deburr.
- 3.5 Repeat steps 3.2 to 3.4 for the opposite side of the skidtube.
- 3.6 Vacuum the debris from inside of the skidtube. Touch up affected area using (Alodine 1200 or 1201) per MIL-DTL-5541.
- 3.7 Install 8x D5374-3 Bushings in the new holes. Seal bushings with Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant as shown in Section C-C.
- 3.8 Remove and discard all hardware attaching the training wearplates in front of the skidtube ground handling lugs.
- 3.9 If the D119-646-314 Skidtube Protector Kit is required for hoisting operations on the RH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS11490D332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 3.10 If the D119-646-313 Skidtube Protector Kit is required for hoisting operations on the LH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS11490D332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 3.11 If the D119-646-314 Skidtube Protector Kit is required for rappelling operations on the RH side of the aircraft install D5371-2 Hook using 4x AN3-45A bolts, 8x NAS11490D332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 3.12 If the D119-646-313 Skidtube Protector Kit is required for rappelling operation on the LH side of the aircraft install D5371-1 Hook using 4x AN3-45A bolts, 8x NAS11490D332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 3.13 Reinstall the D3849-043 Training Wearplate on the aft end of the skidtube per ICA-D119-646 Section 32, except for hardware under D5369-1/-2 Cable Guard.
- 3.14 Install D5369-2 Cable Guard on the RH side of the aircraft using 6x AN3-50A bolts, 6x D5374-1 Bushings, 6x D3904-1 Washers, 6x MS21042L3 nuts as shown in Figure 2 Section B-B. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 3.15 Install D5369-1 Cable Guard on the LH side of the aircraft using 6x AN3-50A bolts, 6x D5374-1 Bushings, 6x D3904-1 Washers, 6x MS21042L3 nuts as shown in Figure 2 Section B-B. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 3.16 Update aircraft log book to indicate installation of the D119-646-313/-314 kit and adjust weight and balance record for the aircraft with weight and balance data provided in Section 5.0 of this document.

NOTE: Additional NAS1149D0332J washers may be installed under the nuts to ensure 1.5-4 threads in safety on the bolts. Although not generally necessary, it is also acceptable to replace the AN3 bolts provided with longer or shorter AN3 bolts, if required.

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4.0 PARTS LIST:

Qty. -313	Qty. -314	PART NUMBER	DESCRIPTION
X		D119-646-313	SKIDTUBE PROTECTOR, LH
	X	D119-646-314	SKIDTUBE PROTECTOR, RH
6	6	D3904-1	WASHER
6	6	D4506-3	WASHER
1		D5369-1	CABLE GUARD, LH
	1	D5369-2	CABLE GUARD, RH
1		D5371-1	HOOK, LH
	1	D5371-2	HOOK, RH
1	1	D5372-1	PLUG
6	6	D5374-1	BUSHING
8	8	D5374-3	BUSHING
1	1	D5376-1	DRILLING JIG
4	4	AN3-45A	BOLT
6	6	AN3-47A	BOLT
6	6	AN3-50A	BOLT
14	14	NAS1149D0332J	WASHER
10	10	MS21042L3	NUT

5.0 WEIGHT AND BALANCE

The following weight and balance changes are applicable:

Installation	Weight	LONGITUDINAL		LATERAL	
		Arm	Moment	Arm	Moment
D119-646-313 SKIDTUBE PROTECTOR, LH	4.3 lb 1.95 kg	108.1 in 4.3 m	465 in-lb 8.4 kg-m	-43.4 in 1.7 m	-187 in-lb -3.3 kg-m
D119-646-314 SKIDTUBE PROTECTOR, RH	4.3 lb 1.95 kg	108.1 in 4.30 m	465 in-lb 8.4 kg-m	43.4 in 1.7 m	187 in-lb 3.3 kg-m

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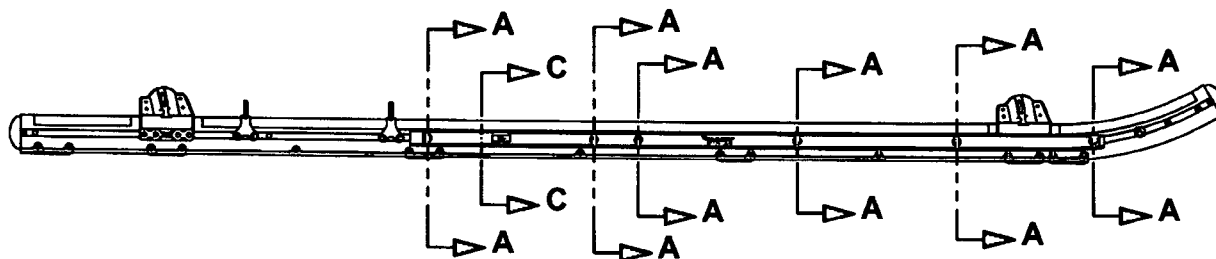


FIGURE 1: D119-646-314 SKIDTUBE PROTECTOR KIT, RH (SHOWN)
(D119-646-313 SKIDTUBE PROTECTOR, LH (OPPOSITE))
(SHOWN INSTALLED ON D119-646-011/-012/-111/-112 SKIDTUBES)

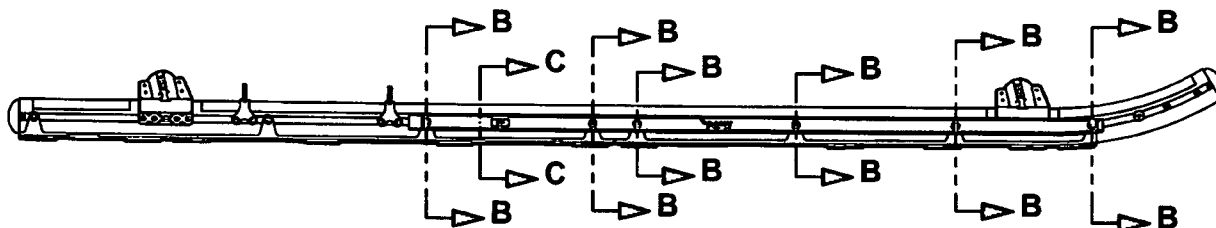
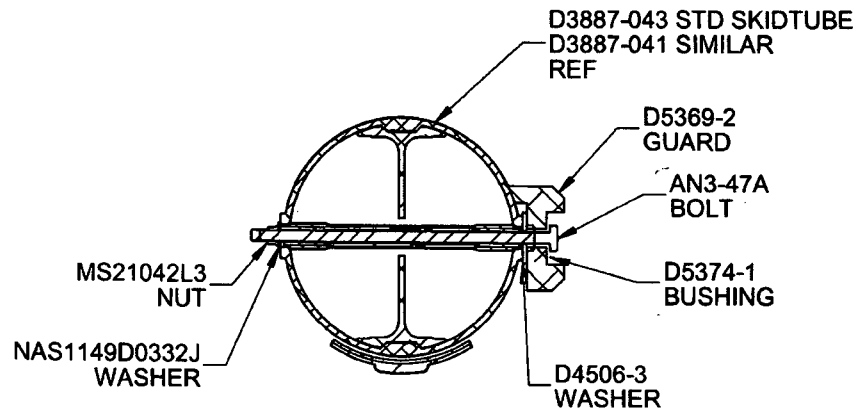
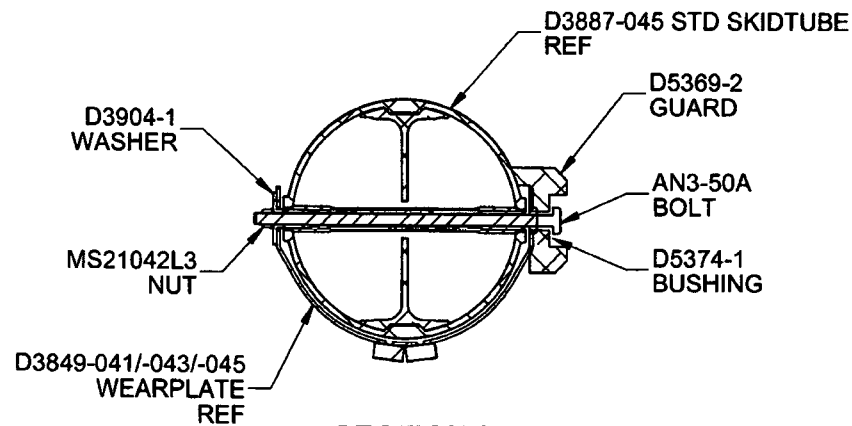


FIGURE 2: D119-646-314 SKIDTUBE PROTECTOR KIT, RH (SHOWN)
(D119-646-313 SKIDTUBE PROTECTOR, LH (OPPOSITE))
(SHOWN INSTALLED ON D119-646-211/-212 SKIDTUBES)

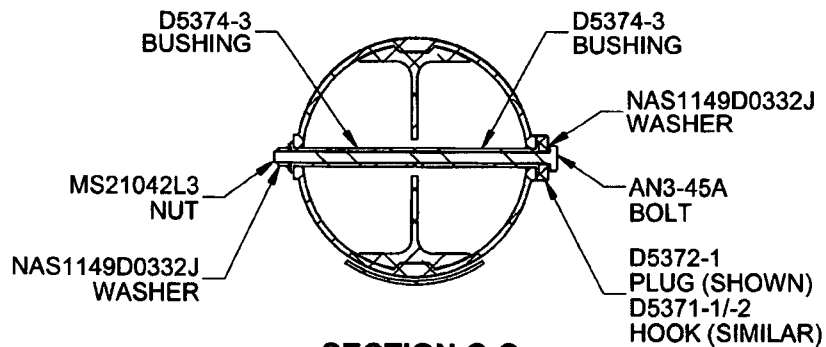
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SECTION A-A



SECTION B-B



SECTION C-C

(D5369-2 NOT SHOWN FOR CLARITY)

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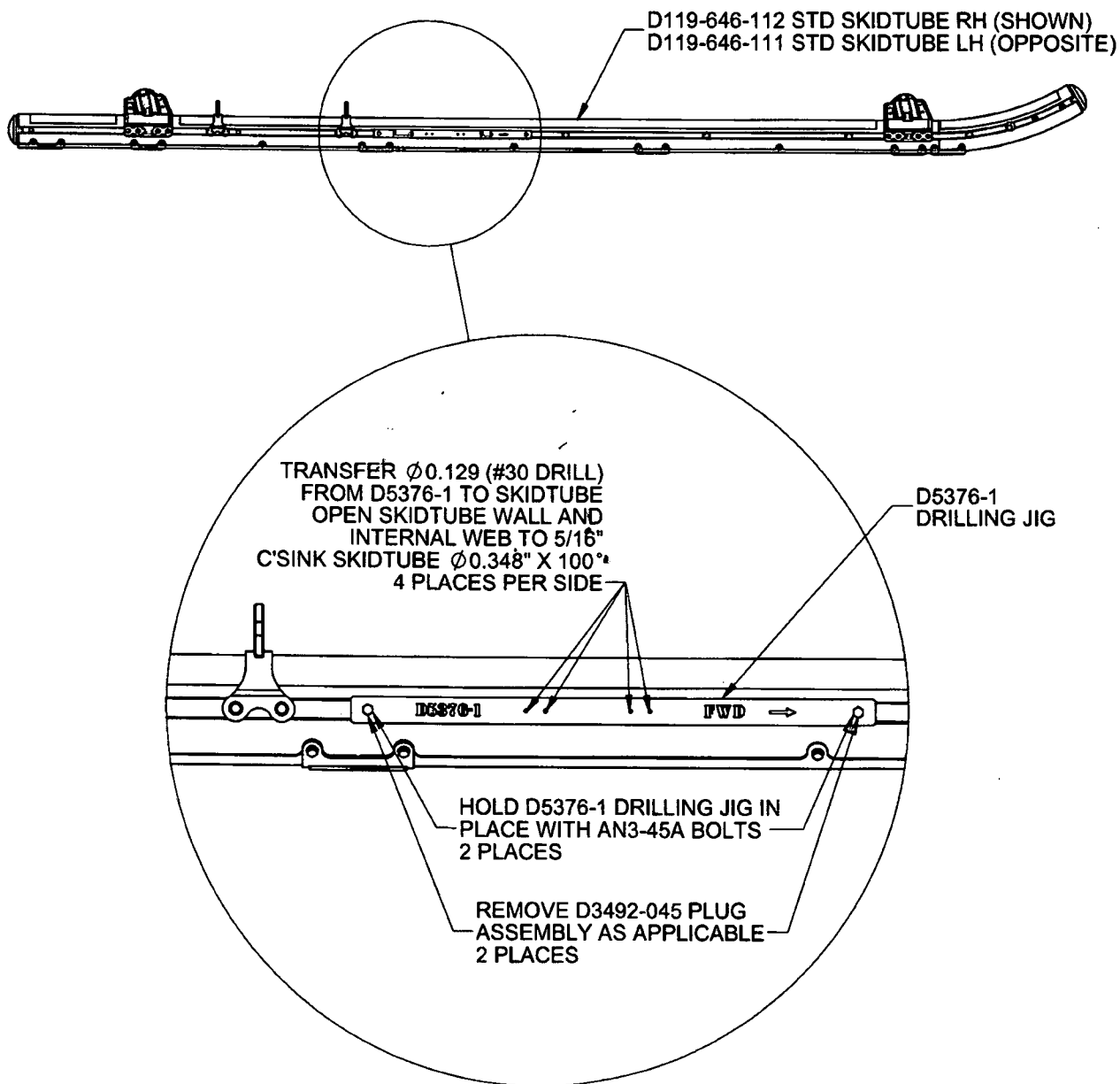
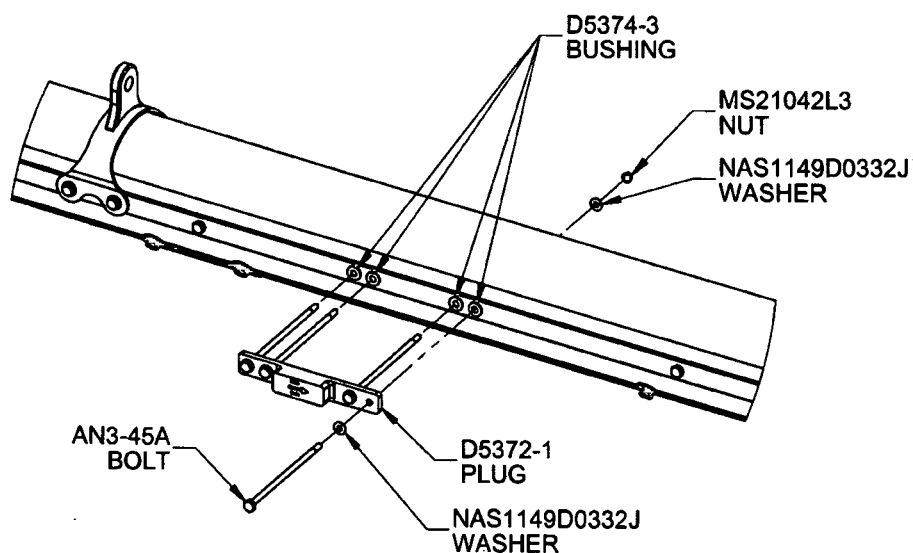
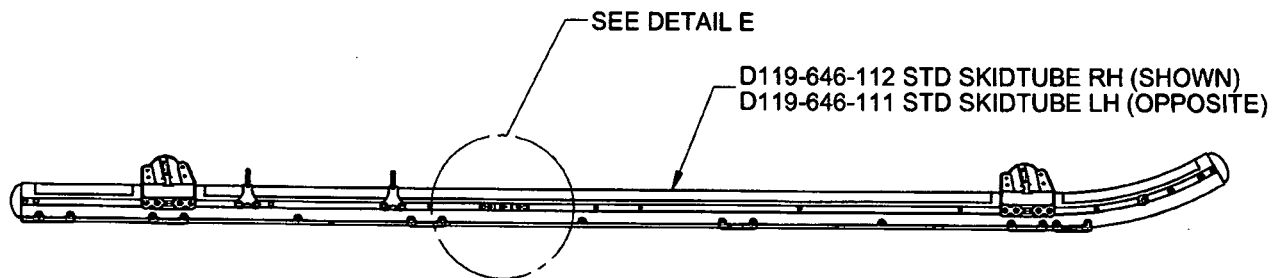


FIGURE 3: USING D5376-1 DRILLING JIG

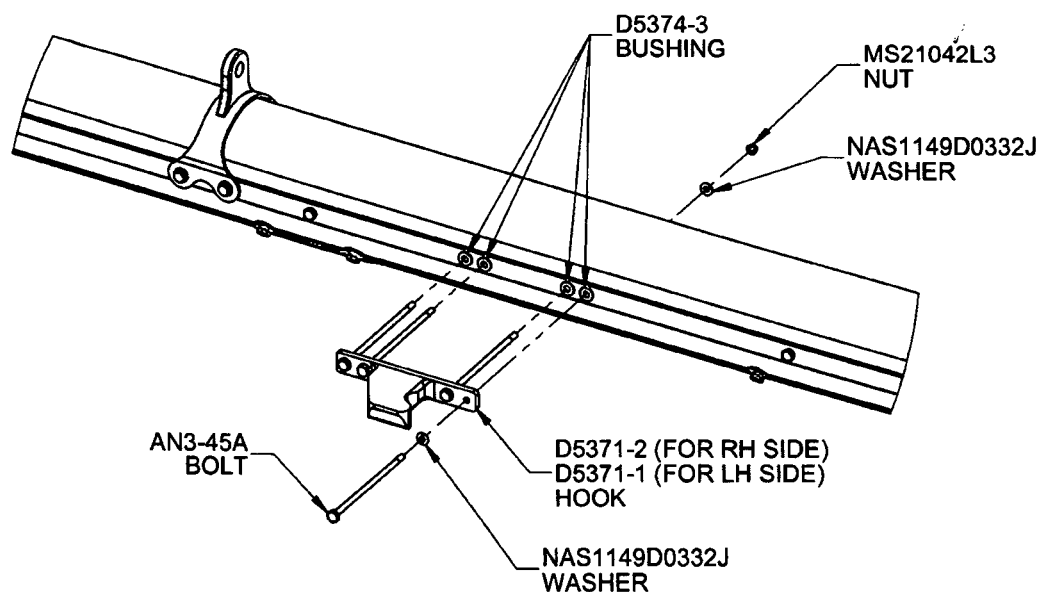
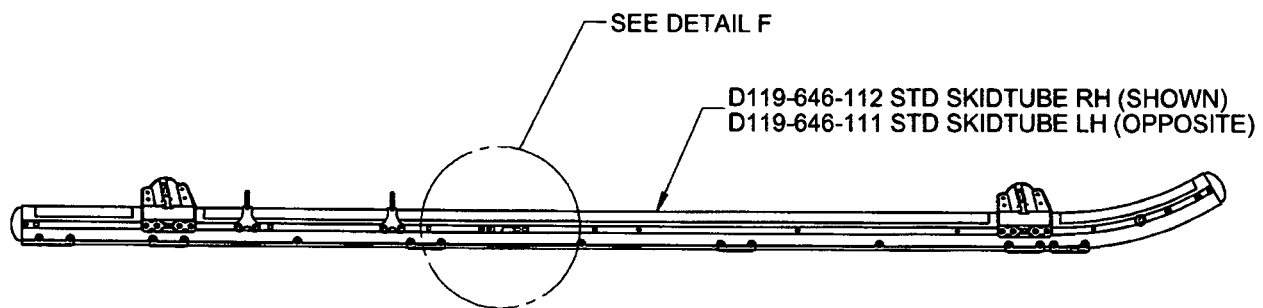
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DETAIL E

FIGURE 4: D5372-1 PLUG INSTALLATION

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DETAIL F

FIGURE 5: D5371-1/-2 HOOK INSTALLATION

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